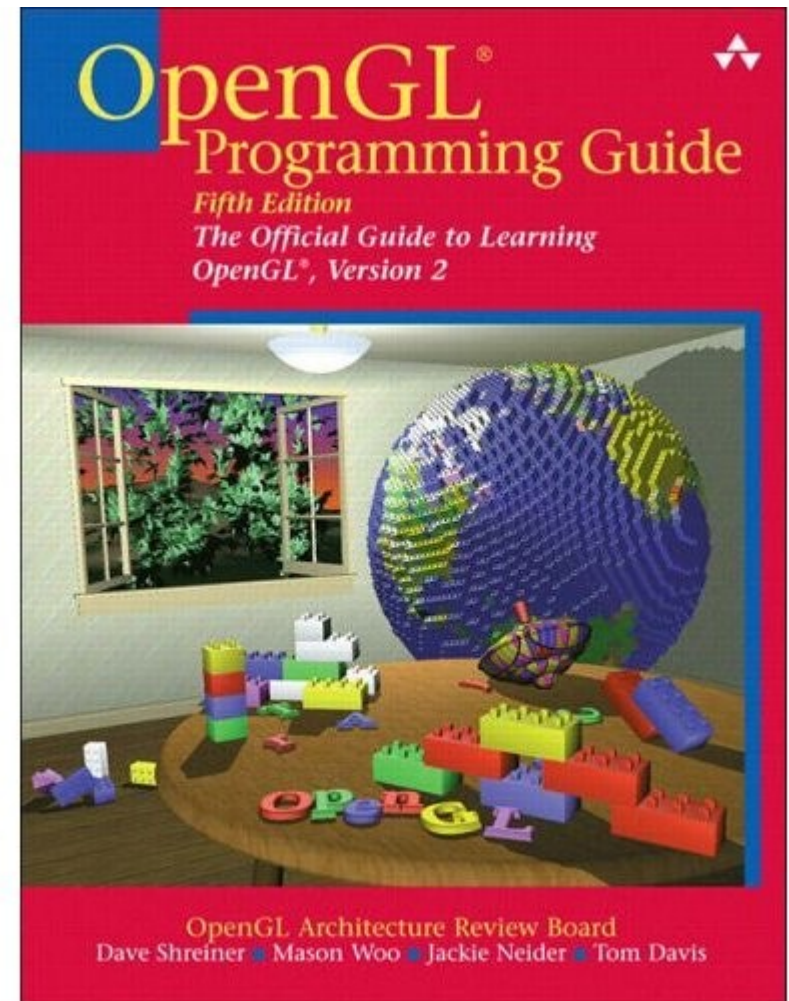


# Generating and Visualizing PhysBAM Data

# The Basics

- Rasterization Software
- Cross Platform
- Fast
  - Hardware Accelerated
- Basic Features
  - Basic Lighting
  - Basic Shading
  - Texture Mapping

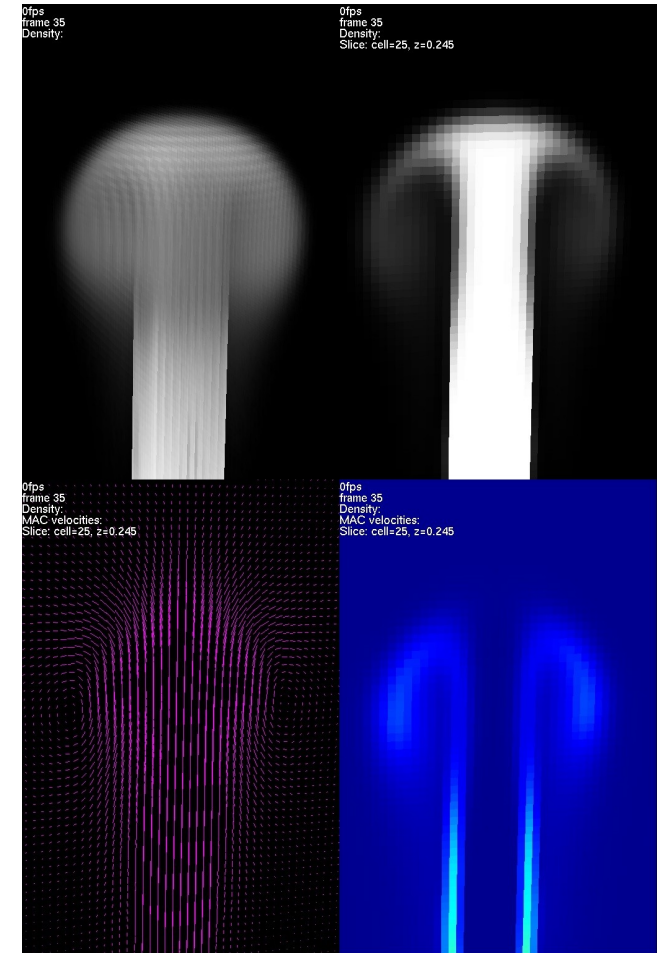
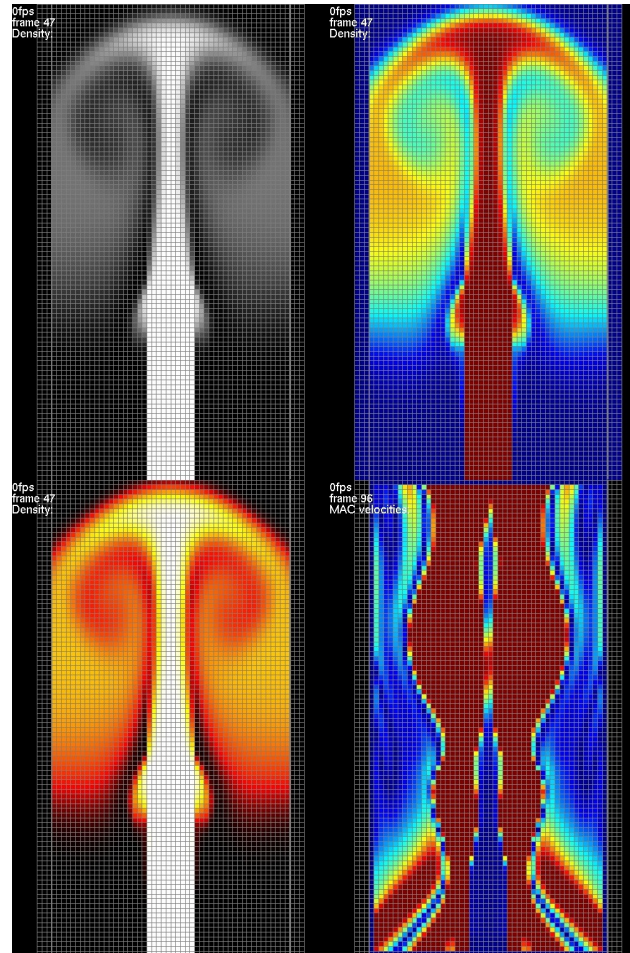
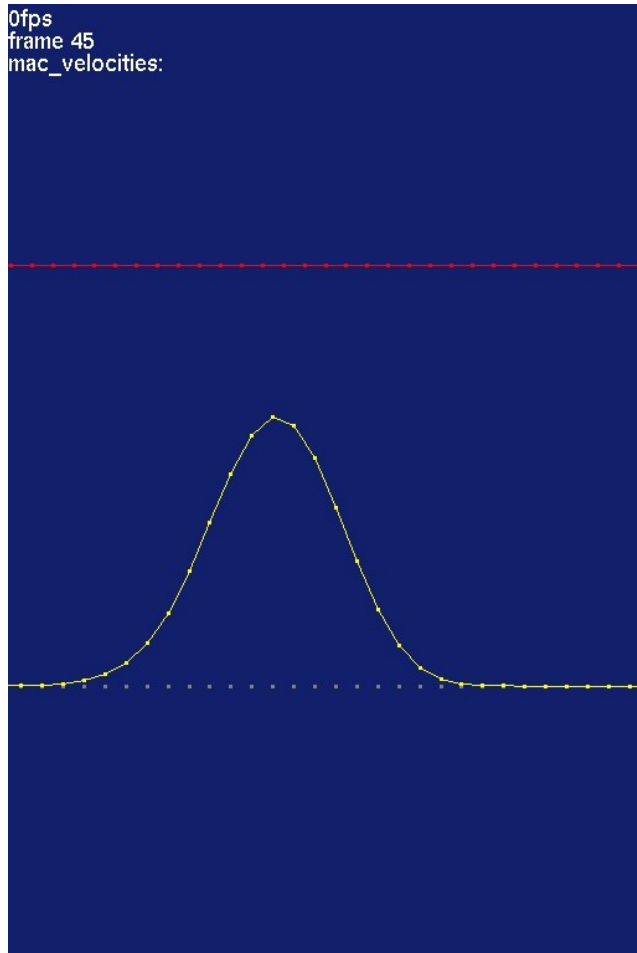


# The Basics

- Set of simple commands
  - glLight
  - glBegin...glNormal...glVertex...glEnd
  - glTranslate
  - glRotate

# PhysBAM

- Three Viewers
  - One per dimension



# 1D Viewer



# 2D Viewer



# 3D Viewer



# Commands

- Playing
  - “p” play
  - “s” step
  - “S” step back
  - “r” restart
  - “z” end
  - “g” goto
  - “ctrl+d” capture



# Commands

- Visualization
  - “V” show velocity
  - “d” show smoke
  - “6” show grid
  - “-” decrease velocity size
  - “=” increase velocity size
  - “ctrl+h” slice mode
  - “[“ and “]” increment and decrement slices
  - “\” change slice axis

# Smoke

- Run
  - scale – resolution of an  $n \times n$  grid
  - e – last frame of a simulation
  - restart – frame to restart the simulation from
  - 3d – run the simulation in three dimensions
- Output to the output directory

# How to Add a Sphere

- Files to modify
  - SMOKE\_EXAMPLE{.h,.cpp}
- Use a SPHERE<TV> object
- Works with other basic geometry

# How to Add a Sphere



# How to Simulate Particles

- Files to modify
  - SMOKE\_EXAMPLE{.h,.cpp}
  - SMOKE\_DRIVER.cpp
- Stored as an array of positions

# How to Modify the viewer

- How to add visualization
- Files to modify
  - main.cpp

Can use `OPENGL_COMPONENTS`

# How to Add Particles



# How to Add Particles

